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THE AMERICAN MATHEMATICAL MONTHLY.

Entered at the Post-Office at Kidder, Missouri, as Second-Class Mail Matter.

VOL. I.

OCTOBER, 1894.

No. 10.

BIOGRAPHY.

DR. GEORGE BRUCE HALSTED.

BY LEONARD E. DICKSON, M. A.

DR. HALSTED is of a historic family, a descendant of the second son of Sir Lawrance Halsted, Admiral of the British Navy, to whom the Halsted coat-of-arms was granted by Royal Letters-Patent. Dr. Halsted and his brother are Princeton graduates, as were also his father and his father's brother, his grandfather and his grandfather's brother, and his great-grandfather. General Halsted's munificent gift, the Halsted Observatory at Princeton, costing over one hundred thousand dollars, is a fitting memorial of this connection through generations.

The family bore an active part in the American Revolution. Dr. Robert Halsted was betrayed to the English and imprisoned in the Old-Sugar-House prison in New York City. While the Halsted Manor was untenanted save by Miss Nancy Halsted and her mother, this young girl discovered a party of British soldiers in an open boat approaching the landing. Giving the alarm to her mother, the young lady seized a heavy musket, and, resting it on the corner of a stone wall, fired straight into the loaded boat just as it was touching shore. Panic-stricken at the resounding report of the heavy musket so utterly unexpected, the soldiers rowed away in haste. The heroic act of this girl had saved many homes from pillage. At a dinner party soon after, General Washington proposed a particular toast to Miss Nancy Halsted for her brave act. Other instances in the family history of such deeds of daring might be mentioned.

Dr. Halsted's mother was the only daughter of a very wealthy family resident in Charleston, South Carolina; but from the first war-trump of 1860 this fabric of wealth, slaves and personal property, began to dissolve, and even



the family real-estate in Charleston was so depreciated in value that it could scarcely be sold for more than the accumulated taxes.

Thus the subject of our sketch, instead of being a wealthy slave-holder, found himself a poor student at the ancestral college, but unlike his predecessors, dependent solely upon his wits for maintenance. While yet a Freshman, two of his own classmates made the discovery that he possessed an occult power of imparting mathematics to the most obtuse. They found that, by some mysterious and wholly unaccountable gift, he makes mathematical acquirement not only easy, but a delightful recreation, even to those who before had maintained that they never could possibly learn any mathematics. These two classmates, out of friendship for whom young Halsted had voluntarily exerted his gift, now sounded his praises abroad, and he was besought to give lessons for pay to sons of rich men, athletes, rowers, base-ball and foot-ball players in danger of being dropped for failure in mathematics. Not even charging the highest prices could shake off these suppliants for what they considered a sort of mesmeric cure, which received them as acknowledged dunces and graduated them respectable mathematicians.

This enviable reputation, so early attained, has followed Professor Halsted throughout his whole career. Young ladies continually bring their friends into his larger classes, knowing that they will be fascinated by his brilliant lectures, remarkable alike for their clear, lucid, rigorous style of expounding the intricacies of mathematics, and for their wealth of highly interesting and instructive forays into nearly every field of knowledge.

Young Halsted took first place in his class in mathematics every term of every year of the entire Princeton course, and on graduating, won the mathematical fellowship of six hundred dollars. To perfect himself in applied mathematics, he went from Princeton to Columbia College School of Mines. Here on entering he passed the entire course of pure mathematics, much to the astonishment of the amiable professors, and his tuition fee of two hundred dollars was remitted to him.

While at the school of Mines, in an Inter-collegiate contest open to all American Colleges, Halsted won a prize of two hundred dollars. Among the contestants was Professor Thomas Craig, now head professor of mathematics at Johns Hopkins University. The examiners in this contest were Professors Michie of West Point, and Professor Simon Newcomb of Washington.

Made one of the first twenty Fellows in the new Johns Hopkins University, Halsted constituted alone the first class there of the renowned Sylvester. From their very first meeting the famous Englishman showed a marked friendship for the young American, and his historic address before the University contains a generous tribute to his enthusiastic pupil. When later Dr. Halsted went to Berlin to pursue his studies, Sylvester gave him a flattering letter to Borchardt, then not only one of the four great professors at that greatest of German Universities, but also editing Crelle's Journal and of great private wealth, living in a veritable palace. Since his return to England as Savilian Professor of Geometry in the University of Oxford, Sylvester has

shown that he still cherishes this particular regard for Professor Halsted by proposing his name for membership in the London Mathematical Society.

After two years at Johns Hopkins as Fellow, Halsted received in 1879 the degree Doctor of Philosophy. About this time appeared in three papers in the American Journal of Mathematics his extraordinarily influential Bibliography of Hyper-Space and Non-Euclidean Geometry, since continually referred to in every learned country in the world. This has been in great part reprinted twice—once at Kiev and once in the collected works of Lobachevsky, and a new edition has just been prepared by the eminent Russian geometer, Professor A. Vasiliev, of the University of Kasan.

At this time Dr. Halsted was called to Princeton to plan and inaugurate a system of Post-Graduate Instruction in mathematics. His phenomenal success is shown by the fact that his pupils in Graduate Mathematics have become Professor Fine and Professor Magie of Princeton, Professor Kimball of Johns Hopkins, Professor Durell of Dickenson, Professor McNeil of Lake Forest, Professor Perrine and Professor Carman of Leland Stanford, Professor Crew of Northwestern, Professor Riggs and Professor West of Syria, not to enumerate others.

From this brilliant field of work Dr. Halsted was called by a telegram from the University of Texas, announcing his election to the professorship of mathematics, and asking if he would accept the urgent call.

During the period of eight years from his entrance to Johns Hopkins to his acceptance in 1884 of the chair of Pure and Applied Mathematics in the University of Texas, Dr. Halsted produced as many as 17 scientific papers on Mathematics and Logic for leading journals of this country and Eng. as well as his *Metrical Geometry*. This first book from the pen of Dr. Halsted was most favorably received here and in England, and had the honor of being freely drawn upon for the article on "Mensuration" in the last edition of the Encyclopaedia Britannica. In this book appeared Dr. Halsted's remarkable two-term prismoidal formulæ.

The past decade, spent in Texas, has abundantly proven the inexhaustible fruitfulness of Dr. Halsted's genius. Not less than 25 valuable productions, including his books on Geometry, belong to this period. His *Elements of Geometry* which appeared in 1885, has passed through six editions. It is here that Dr. Halsted shows himself the profound geometer that he is. With his usual originality and intuitive genius, he has left the traditional ruts of American writers on Geometry, and built up a delightful but rigorous structure, which has already had no small influence upon sound geometrical teaching in this country.

Perhaps there is no production of Professor Halsted which so well reveals the writer as his *Elementary Synthetic Geometry*, published two years ago. Rejecting utterly the only method the world knew for twenty centuries, he makes no use of congruent triangles, using instead the circle from the very beginning. Two-dimensional spherics follows as the second book, an epoch making innovation. Ratio and proportion are treated with all the rigor of Euclid, in noteworthy contrast to the usual American text-book.

Dr. Halsted's translation of the works of the Russian Lobachevsky and the Hungarian Bolyai on Non-Euclidean Geometry have received the thanks and praise of all. A reprint of these has been made by the Imperial University of Japan.

Many of his scientific articles are of a popular nature, appearing in the *Monist*, *Educational Review*, *Popular Science Monthly*, etc. For a bibliography of Prof. Halsted's works the reader is referred to the *Johns Hopkins Bibliographia Mathematica*, pages 40 and 41, where a list of over forty scientific productions of his is given.

The scientific world has not been slow to recognize in Professor Halsted a great mathematician; for among many honors, he has been made a member of the "Circolo Matematico di Palermo," of the London Mathematical Society, of the Mathematical Society of France, of the two best known Scientific Societies of Mexico, of one in Russia, as well as of several in England and America.

Professor Halsted has been eminently successful in his work in the University of Texas. A natural born teacher, he inspires his pupils with a lasting enthusiasm for science, a love for mathematics. So highly interesting are his discourses upon mathematics, interfused with new and attractive ideas from other fields of knowledge, that it is wholly unnecessary to call a roll to assure attendance at class. I am convinced that his pupils, without exception, thoroughly enjoy the course in mathematics under him, although the majority of them enter with a pronounced dislike for it. No wonder they leave fully convinced of the wonderful genius of this man, the central figure of the Texas University.

As a public lecturer, Dr. Halsted has few equals. By his happy command of speech, his sparkling wit and cutting sarcasm, his wealth of illustration, his breadth of thought, and above all the freshness and newness of his ideas—startling perhaps, but pleasing—he never fails to impress and please his audience. He lectures on such subjects as "Dreams," "Suicide," "The Elixir of Life," "Mexico," as well as strictly scientific topics.

Dr. Halsted married a very refined lady, of a highly connected Southern family, the Swearingens. To their three bright children Dr. Halsted is completely devoted.

The alumni and patrons of the young University of Texas greatly appreciate the honor which Dr. Halsted's high achievements have conferred upon the University and especially its school of Mathematics; and join heartily in wishing that another decade may bring equally great returns to the University from its most distinguished professor.

